Theoretical aspects of autism: Causes—A review

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FROM ABSTRACT

Autism, a member of the pervasive developmental disorders (PDDs), has been increasing dramatically since its description by Leo Kanner in 1943. First estimated to occur in 4 to 5 per 10,000 children, the incidence of autism is now 1 per 110 in the United States, and 1 per 64 in the United Kingdom, with similar incidences throughout the world.

Searching information from 1943 to the present in PubMed and Ovid Medline databases, this review summarizes results that correlate the timing of changes in incidence with environmental changes.

Autism could result from more than one cause, with different manifestations in different individuals that share common symptoms.

Documented causes of autism include genetic mutations and/or deletions, viral infections, and encephalitis following vaccination.

Therefore, autism is the result of genetic defects and/or inflammation of the brain. The inflammation could be caused by a defective placenta, immature blood-brain barrier, the immune response of the mother to infection while pregnant, a premature birth, encephalitis in the child after birth, or a toxic environment.

KEY POINTS FROM THIS AUTHOR:

1) Autism is a neuro-developmental disorder.

2) Genetic, environmental, and immunological factors may play a role in the pathogenesis of Autism.

3) Boys have autism 3-4 times more often than girls.

4) 75% of autistic individuals become either institutionalized as adults or are unable to live independently.

5) The estimated lifetime per capita incremental societal cost of autism is $3.2 million per case. "Greater than the monetary cost, the emotional devastation caused by the great difficulties posed by the autistic individual, and the strains on the family."

6) Autism was first described in 1943, with a prevalence of 1/2500 children.

7) In the 1970s, autism was still 1/2500 children. By the 1990s the rate was 1/250 children, a 10-fold increase.

8) "The Center for Disease Control and Prevention states that the prevalence of autism is increasing at epidemic rates."

9) In 2002, the rate for autism was 1/150 children (USA).

10) In 2006, the rate for autism was 1/110 children (USA).

11) A 2007 parent survey showed an autism rate of 1/91 children (USA).

12) The incidence of autism in the United Kingdom is also increasing, with higher rates than in the United States, with a current prevalence of 1/64 children.

13) The autism increase is not a result of reclassification; there have been no changes in prevalence of mental retardation, speech/language impairment, or traumatic brain injury, "which suggests that the increase in autism is real."

Changes in rates of autism incidence

1) In 2004, the flu vaccine containing Thimerosal was recommended for all children 6–23 months old in the United States. In addition, flu vaccination during all trimesters of pregnancy is now universally recommended in the United States. Most flu vaccines contain Thimerosal, despite its implication in autism.
[Important: the flu vaccine still contains Thimerosal with mercury, and is recommended for all children and pregnant mothers, every year]

2) The increase in autism incidence began about 1988–1990.

3) "The new version of the measles, mumps, rubella vaccine (i.e., MMR II) that did not contain Thimerosal was introduced in 1979. By 1983, only the new version was available. Autism in the United States spiked dramatically between 1983 and 1990 from 1/2500 to 1/500."

4) "In 1988, two doses of MMR II were recommended to immunize those individuals who did not respond to the first injection. A spike of incidence of autism accompanied the addition of the second dose of MMR II."

5) "In 1988, MMR II was used in the United Kingdom, which reported a dramatic increase in prevalence of autism to 1/64. Canada, Denmark, and Japan also reported dramatic increases in prevalence of autism."

6) "The rubella component of MMR II was propagated in a human cell line derived from embryonic lung tissue. The MMR II vaccine is contaminated with human DNA from the cell line. This human DNA could be the cause of the spikes in incidence."

7) "An additional increased spike in incidence of autism occurred in 1995 when the chicken pox vaccine was grown in human fetal tissue."

8) The human DNA from the vaccine can be randomly inserted into the recipient's genes. This insertion occurs primarily on the X chromosome in genes involved in nerve cell synapse formation, central nervous system development, and mitochondrial function, accounting for autism primarily in boys. These data "support the hypothesis that residual human DNA in some vaccines might cause autism."

9) "The incidence and prevalence data indicate the timing of introduction of vaccines and changes in the type and increasing number of vaccines given at one time implicate vaccines as a cause of autism."

10) The current recommended immunization schedule in the United States includes six vaccines at 2 months. "The immune system is particularly sensitive at 2 months of age." "The immune system of an infant is compromised at 2 months. A challenge by so many vaccines while the immune system is compromised might contribute to an onset of autism."

Vaccine antigens

1) "Many parents cite normal development of their children until they receive vaccines at about the age of 18 months."

2) A possible cause of autism is that the pertussis toxin in the DPT vaccine creates chronic autoimmune damage to the gut, altering immune function.

3) When the measles vaccine is given, it depletes the children of their existing supply of Vitamin A, which negatively impacts the retinoid receptors, accounting for the distorted vision in autistic individuals. "When the natural form (cis) of Vitamin A was given to autistic subjects for 2–3 months, followed by urocholine, many autistic children showed immediate improvement in their autistic behaviors, including improved eye contact, ability to socialize, ability to sleep through the night, etc."

Vaccine Preservative and Environmental Mercury

1) "There is evidence that Thimerosal (which is 49% ethyl mercury) is indeed harmful." Thimerosal is an antibacterial agent in vaccines. "Thimerosal has been implicated as a cause of autism."

2) "Not only is every major symptom of autism documented in cases of mercury poisoning but also biological abnormalities in autism are very similar to the side effects of mercury poisoning itself."

3) "Autistic brains show neurotransmitter irregularities that are virtually identical to those arising from mercury exposure."

4) "Due to the extensive parallels between autism and mercury poisoning, the likelihood of a causal relationship is great. More evidence linking autism with mercury poisoning is the timing of inclusion of Thimerosal in vaccines in the 1930s closely preceding the discovery of autism in 1943."

5) "There are dangerous effects of Thimerosal on the immune system, particularly on T-lymphocytes. Mercury induces glutathione depletion, increased oxidative stress, and apoptosis in these cells."

6) Thimerosal causes toxic effects on brain cells, affects nerve differentiation, and depletes glutathione.

7) Mercury is both neurotoxic and immunotoxic.

8) Autistic individuals have a 10-fold greater number of hyperactive mast cells. Mercury stimulates to release pro-inflammatory cytokines, which may disrupt the blood–brain barrier and cause brain inflammation.

9) "Cumulative mercury exposure results from mercury as a pollutant in air, soil, dust, water, consumer products, dental amalgam and lighting fixtures, foodstuffs, fish, and seafood. Concerning air, for every 1,000 pounds of mercury (all forms), there was a 61% increase in the rate of autism."

10) "Mercury is found in many foods, including high-fructose corn syrup. The consumption of high-fructose corn syrup could impact the behavior of children with attention deficit hyperactivity disorder (ADHD), which is associated with autism."

11) "The consumption of some artificial food color additives has been shown to lead to zinc deficiency. Dietary zinc is essential for maintaining the metabolic processes required for mercury elimination."

Measles Mumps Rubella Vaccine (MMR)

"An examination of the continuing increase in prevalence in autism in the context of the dates of spikes in increase in prevalence which point to the MMR II vaccine (which did not contain Thimerosal) suggests that something 'new' caused the increase in incidence of autism. The 'new' component could be the human DNA from the preparation of the rubella component of the MMR II vaccine and the chicken pox vaccine."

Metal metabolism disorder

85% of autistic patients have severely elevated Cu:Zn ratios.

Genetics

There is indisputable evidence for a genetic component in autism, because if one identical twin is autistic, the likelihood that the other twin will have autism is 90%. In great contrast, the likelihood that non-identical twins both have autism is only 2–3%. Yet, the genetic cause of autism is only 1–2% of the cases. A "reason to discount an overall genetic cause is that autism is now considered an epidemic and there is no such thing as a genetic epidemic."

Age of parents

1) Advanced maternal and paternal ages are independently associated with risk of autism-spectrum disorders.

2) A 10-year increase in maternal age is associated with a 38% increase in the odds ratio for autism. A 10-year increase in paternal age is associated with a 22% increase.

3) "The trend toward delaying childbearing contributed about a 4.6% increase of autism over the decade." Ageing increases cumulative toxic exposure, resulting in nucleotide repeat instability.

Mitochondrial disease and dysfunction

Mitochondrial dysfunction is caused by environmental toxins and can contribute to the altered energy metabolism in the brains of children with autism.

Pregnancy

1) A defective blood-brain barrier is common in autistic patients.

2) A mother's immune response(s) to infection during pregnancy includes the formation/release of antibodies and cytokines that could cross the blood-brain barrier of the fetus and which, over time, could cause autism.

Imbalance in neural systems

Autism might be caused by an imbalance between excitation and inhibition in key neural systems including the cortex.

Environment

Autism may be a disease of very early fetal development (approximately day 20–24 of gestation), with environmental exposures during pregnancy causing or contributing to autism based on the neurobiology of developmental genes.

Medications are implicated in autism including:

1) Thalidomide by the mother.
2) Misoprostol, a prostaglandin analogue used for prevention of gastric ulcers.
3) Valproic acid, an anti-convulsant.

4) "Acetaminophen has also been suggested to cause autism."

5) "Children given acetaminophen after the MMR II vaccine were significantly more likely to become autistic than children given ibuprofen."

6) "During pregnancy, mothers of autistic children commonly suffer more bacterial and viral infections and fevers, which could affect the fetus to predispose the child for autism. These mothers often take acetaminophen to treat the infections. Acetaminophen overdose depletes the liver's supplies of sulfate and glutathione, impairing its ability to detoxify and excrete harmful substances. Therefore, the fetus could be impaired by the mother's consuming acetaminophen. After birth, if acetaminophen were given to the child, and used repeatedly, the drug could cause depletion of sulfate and glutathione, and the child could regress into autism."

Low Glutathione

"Glutathione (GSH) is the most important antioxidant for detoxification and elimination of environmental toxins. GSH is decreased in the plasma of autistic subjects. In addition, GSH plays a major role in methylation and is intimately involved in detoxification processes."

Phthalates, Polychlorinated Biphenyls (PCBs), Environmental Contaminants

1) Phthalates, an environmental toxin, are implicated in autism.

2) Phthalates are synthetic chemicals with widespread human exposure because of their use in plastics and other consumer products.

3) Humans are exposed to phthalates through ingestion, inhalation, and dermal routes.

4) There is a significant relationship between the concentration of urinary phthalates and the degree of autism.

5) Polychlorinated biphenyls (PCBs) are a suspected as causes of autism.

6) Environmental contaminants, including PCBs, herbicides, perchlorates, mercury, and coal derivatives interfere with thyroid function, and this can affect fetal brain growth, leading to autism.

7) Organophosphate pesticides may contribute to ADHD prevalence.

8) The highest rate of autism is in schools near EPA Superfund sites.

SUMMARY

1) "Autism has increased to epidemic proportions, affecting four times as many males and females."

2) "With a prevalence of 1/110 in the United States, 1/64 in the United Kingdom, and similar ratios in many other countries, [autism is] a very significant threat to future generations is evident."

3) "This review cites documentation of causes of autism, including genetic mutations/deletions, viral infections (i.e., rubella and herpes), and encephalopathy following vaccination."

4) "Autism has been documented to be caused by genetic defects and/or inflammation of the brain. The inflammation could be caused by a wide variety of environmental toxicants, infections, and co-morbidities in individuals genetically prone to the developmental disorder."

Autism Vaccination Relationships

Linked To	Component	Reason
Measles-Mumps-Rubella	Rubella	Contamination with human DNA
Measles-Mumps-Rubella	Measles	Depletes Vitamin A
Chicken pox		Contamination with human DNA
Influenza (Flu)	Thimersol	Mercury Poisoning
Vaccines given too early	6 at 2 months	Immune system is compromised at 2 months
Too many early vaccines	6 at 2 months	Overwhelms the Immune system
Diptheria-Pertussis-Tetnus (DPT)	Pertussis toxin	Chronic autoimmune damage to gut altering immune function

Other Factors Linked To Autism

Environmental Mercury (seafood, amalgams, HFCS, light fixtures, etc.)	Imbalance between cortical excitation and inhibition	Pregnancy Drugs: Thalidomide, Misoprostol, Valproic
Acetaminophen: while pregnant or as child	Artificial food color additives	Polychlorinated Biphenyls (PCBs)
High copper levels	Low zinc levels	Low glutathione
Older parents	Mitochondrial Dysfunction	Pregnancy infections
Organophosphate pesticides	Herbicides	Phthalates